2016 Nonresidential Draft ACM Reference Manual Update

Nonresidential Draft ACM Reference Manual Overview

- Procedures required for Compliance Software
- Provides reference (standard design)
- Mostly based on, *but not limited to*, Prescriptive requirements
- Performance method accommodates design flexibility while ensuring that a minimum performance is met
- Provides a set of software tests (the Reference Method)

CBECC-Com 2016 Timeline

Targeted Date	Version
• August 2015	Alpha 1
• September 2015	Alpha 2 (if necessary)
• November 2015	V1 (Approved Version)
• March 2016	V2 Alpha
• June 2016	V2 (Approved Version)

CBECC-Com Alpha 1 Overview

- Uses new 2016 TDV data set
- Updates opaque envelope values
- No changes for Window/Skylight performance values in 2016
- Update minimum equipment efficiencies to align with §110.2
- Updates the allowed indoor Lighting Power Density (LPD)
- Updates lighting Power Adjustment Factor (PAF)

Envelope Updates §140.3

Nonresidential Buildings

- Roofs
  - 'Wood-Framed and Other'
    - CZ 1-5, 9-16 U-0.034
    - CZ 6-8 U-0.049
  - 'Metal Building'
    - CZ 1-16 U-0.041
- Walls
  - 'Wood-Framed and Other'
    - CZ 1 U-0.095
    - CZ 11 U-0.045
    - All other CZ remain unchanged
  - 'Metal Framed'
    - CZ 1,6,7 U-0.069
    - All other CZ remain unchanged

(CZ – Climate Zone)

Envelope Updates §140.3

High-rise Residential Buildings Including Hotel/Motel

- Roofs
  - 'Wood-Framed and Other'
    - CZ 1 U-0.028
    - CZ 3,5,6 U-0.034
    - All other CZ remain unchanged
  - 'Metal Building'
    - CZ 1-16 U-0.041
- Walls
  - 'Metal Framed'
    - CZ 1-6,8-14,16 U-0.069
    - CZ 7 Remains unchanged
    - CZ 15 U-0.048

(CZ – Climate Zone)

Minimum Equipment Efficiencies

- Revised minimum HVAC equipment efficiencies to match the requirements in §110.2
  - Updated EER and COP requirements for Water source Heat Pumps
  - Updated Chiller efficiency requirements
  - Updated Packaged Terminal equipment efficiency requirements
- CBECC-Com Alpha 1 release only addresses full load efficiency updates
  - Equipment IEER ratings do not directly impact part-load efficiency curves but minimum efficiency requirements of §110.2 will be validated in version V1

Lighting Power Density (LPD)

- Adjustments made to reflect area category and tailored lighting changes in §140.6
- Two new space types added
  - Transportation Function, Concourse & Baggage (0.50 W/sf)
  - Transportation Function, Ticketing (1.00 W/sf)

Lighting Power Adjustment Factors (PAF)

- PAF allows for reduction in design lighting power to help meet baseline lighting requirements
- Revised to match Energy Standards Table 140.6-A
- New PAF for daylighting ‘dimming + off’ controls
- New PAF for institutional tuning

Anticipated ACM Updates for version V1

- Upgrade to EnergyPlus v8.3 simulation engine
- Mandatory Minimum envelope U-Factor validation
  - Evaluates weighted-averaged U-Factor requirement (§120.7 and §141.0(b)1)
- Thermally Driven Chiller
  - Absorption Chiller (hot-water, not steam)
- Waterside Economizer
- Duct Leakage Sealing for ducts in unconditioned spaces
  - Only applicable to spaces under 5,000 sf served by constant-volume systems with more than 25% of ducts in unconditioned space (HERS Verification)

Unmet Load Hours (UMLH)

- UMLH is a term used as a criterion for sizing HVAC equipment
- Occurs when a Thermal Zone exceeds setpoint by >1°F for 1 hour
  - Some spaces are excluded from UMLH (restrooms, hallways, storage, etc)
- 150 UMLH threshold
  - Previous requirement would stop simulation and designer to resize HVAC equipment
  - Requirement temporarily lifted when EnergyPro began using CBECC-Com (April 2015) to accommodate learning curve and training period
  - Anticipated to be required in version V2
  - http://bees.archenergy.com/faq_hvac.html#umlh

Variable Refrigerant Flow (VRF)

- There is currently not an approved calculation method
  - Modeled as minimally efficient split heat pump
- Exceptional Method procedure §10-109

  (Applies to any design, material or device that cannot be adequately modeled)
  - No VRF application received during 2013 code cycle
  - Applicant to demonstrate accuracy of proposed approach
  - Workshop
  - Public comment period
  - Presented for Approval at Business Meeting
  - Incorporated into software

QUESTIONS